BIOSORPTION OF ETL DYE BY ARUNDO-DONAX SORBENT: BOX-BEHNKEN OPTIMIZATION, EQUILIBRIUM AND KINETIC STUDIES

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This research study is divided into two parts; the first part investigates the batch ETL dye sorption by Arundo-donax. The sorbent was synthesized and characterized by scanning electron microscope (SEM) and Fourier transform infrared spectroscopy (FTIR). The effects of pH, initial dye concentration, contact time and mass sorbent in the efficiency of ETL sorption were investigated. Furthermore, pseudo-first and second-order kinetic models were also used to analyze sorption kinetics. The equilibrium adsorption results were fitted by the Langmuir and Freundlich isotherms. Maximum amount ETL removal 56.49 mg/g was observed at pH 2, sorbent weight 50mg and contact time 60min.

In the second part the aim was to evaluate the impact of operating conditions in the efficiency of Arundo-donax to remove ETL dye. From the first part, three factors were chosen (initial solution concentration of ETL, pH solution and Arundo-donax weight). These factors were investigated using three level box behnken design to optimize operating conditions. Analysis of variance (ANOVA) were using to testing the obtained linear model. The pH solution and initial dye concentration have an important effect compared to the effects of others factors. Correlation coefficient R^2 was found 0.99, which mean the accordance between the model and the experiment data.

Biography

Ouazani F is PhD student in Laboratory of materials recovery in Mostaganem University, Algeria. She continues her works on water treatment using physicochemical protocols. She has 2 publications.

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